Students' Perception: Integrating Technological Literacies Across Academic Disciplines in Tertiary Level

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Abstract— Technology integration literacy has significant implications for the students' learning and career as they need to know how to select, use, assess, and implement technology within different learning areas. This study aims to determine the first-year education students' perception of the integration of technological literacy in a community college in the province of Misamis Oriental. Results show that the level of incorporation of technological literacy is important for these prospective teachers since it corresponds to the ever-evolving trends that include the use of technology by students as well as the incorporation of technology in teaching processes. This issue was questioned as part of the survey, and the outcomes that referred to the technological literacy workshops, technological literacy courses, and technological literacy activities scored the highest mean of 3.28, regarded as very significant. This finding highlights the need for applied work concerning technology integration into academic learning with considerations towards improving students' learning and readiness in taking the path and role of a teacher. Furthermore, the study also discusses the psychological aspect of integrating technological literacy with traditional subject matters, stressing the positive aspect of the effort, indicating that the integration helps the students face the challenges of the modern education systems. It empowers learners with confidence and sharpens their critical thinking skills, hence producing competent learners in preparation for a constantly changing educational setting. This recommends that educators must have definite professional development in order to stay current with technological competence in supporting their students. Therefore, the incorporation of technological literacy in content areas is essential for producing effective and competent prospective teachers who are ready to use technology as a means and an end to augment student learning.

Keywords—Technological Literacy; Academic Disciplines; Integration; Student Perception; Tertiary Level

I. INTRODUCTION

Technology integration is now the latest trend in delivering instructions to students. In fact, integrating communication technology and new literacies into different areas of learning has demonstrated positive effects on students' engagement and achievement (Smith et al., 2019). By integrating post-prescribed and post-modern literacies across the curriculum, educators can train college students to be competent and capable of information literacy. An important issue within the sphere of education involves teaching college students to support them so they use new literacies in their learning process across the curriculum. In this idea, they integrate new literacies into the learning process, and their goal is to equip the learners with all the necessary attributes and comprehension to grapple with the complexities of various disciplinary domains.

In this way, the frequency and purposes of using digital technologies in the learning process will allow for the identification of the need for targeted interventions to address student needs. Scholars like Acharya and Lee (2018) provide insights into the adoption and factors that motivate e-learning systems and students' perceptions and use of technology. Recent research brings into focus the significance of digital literacy as one of the crucial skills. As Jackson and his team reported in their study (Jackson et al. 2022), any learning system that does not cultivate digital competence and bring it into the curriculum takes away from students the preparation they need to succeed in the technically enlightened world. More importantly, current research (Smith & Storrs, 2023; Lee et al., 2022) has articulated that digital literacy is likely to boost learners' academic performance.

In the context of higher education, Istyadi & Sriwati (2024), carrying the research analysis, emphasized that the element of academic literacy is significant to improve the student's writing as well as reading in the academic language for critical thinking and information analysis. This ability is a precursor to the development of academic writing skills in students. The student's academic literacy weaknesses in the Faculty of Education at Lambung Mangkurat University include the following: The students struggled to explain the background of the problem, state clear research questions, and construct arguments. Additionally, the role of academic literacy practices in the social context is stressed to show that students are required to distinguish the exemplary communication practices within particular academic fields.

Information literacy contributes to promoting social change (Basikabio, 2024). Information literacy and the relationship between information literacy and social change in the context of academic libraries. Information literacy is the most critical tool to enable users to compete for abundant information, select worthy information bits, and make the right decisions. Thus, academic libraries, as the critical retail hubs of information in college and university settings, are well placed to support the cultivation of information literacy skills among students and social transformation.

The rationale for teaching and practicing integrated new literacies in content areas has a deeper symbolism. To address this aim, it first endeavors to make students encounter different voices and information resources to enhance learner criticality. The preparation of new literacies, including digital, media, and information, into a range of subjects would enable students to acquire a wider perspective of complex subjects while at the same time learning how to evaluate information. This study also seeks to provoke college students into embracing innovation and creativity by discouraging them from the conventional manner of expressing and presenting ideas and research findings in their academic papers. Teachers can equip the learners with multiple literacies and hence become flexible in the constantly changing environment of higher institutions, not forgetting the job markets.

II. METHODOLOGY

2.1. Research Design

This study employed a quantitative approach to identify and gauge the students' attitudes toward effective technological competencies in subject areas. Thus, it compiles a variety of numeric data (Coghlan & Brydon-Miller, 2014). It makes it easy for the researchers to carry out simple, right through to highly complex statistical analyses on the aggregated data, relationships between the data, and comparisons on aggregated data. The methods applied by the researchers in this study included questionnaires as well as structured observations.

2.2. Respondents

In the identification of respondents for the study on empowering college students through integrated technological literacies across academic disciplines, the researchers employed purposive random sampling to choose seventy-one (71) out of eighty-six (86) total populace, that is, 10% of the first-year students' population of a community college for School Year 2023-2024. The respondents have about 3-5 minutes to complete the survey questionnaire. Age, sex, socio-economic status, and type of high school were not considered as part of the criteria in selecting these respondents. Thus, regardless of their demographic profile, only the first year was the maximum part of the criteria. Some of these students may not have been exposed to the technological devices employed in their former schools, potentially limiting their technological literacy.

2.3. Instrument and Ethical Consideration

The researcher adapted and modified a researcher questionnaire based on the study by Khoo & Kang (2022), "Proactive Learner Empowerment: Moving Towards a New Model of Academic Integrity for ELL," to fit with the culture and nature of the

respondents. Participants completed a survey that contained questions with a sequential rating scale ranging from 1 to 5, signifying Strongly Agree to Strongly Disagree. Local ethical considerations involved proper identification and anonymity of participants as well as adherence to national ethical regulatory standards like debriefing, the participants' right to withdrawal, and the Data Privacy Act to reduce the risks and enhance benefits derived from the study. The Student's Beneficial Experience: This approach requires increased skills in critical thinking, communication, and research abilities among students in their fields of study, as well as problem-solving.

2.4. Data Gathering Procedure

This research aims to examine how college courses are designed to encompass new literacies, including digital, technological, and critical thinking, to empower learners. This paper examines student perceptions of the relevance and effectiveness of these forms of literacies across subjects to assess their learning effectiveness when intersectional education is applied. Each participant was presented with a consent form explaining the rationale for the study and the fact that participation was anonymous and voluntary, and then they signed it. Self-administered questionnaires were sent through the Internet and e-mail and physically administered at well-visited places on the campus. In order to ensure the accuracy of the responses, participants could fill out the survey independently and without any influence or pressure. Also, they were given sufficient time. The survey asked questions about the participants' demography to gain more insight. Regarding data analysis, the research team took the following steps: In a quantitative manner, the research team summarized the identified data by outlining the characteristics of the participants, as well as numerical and graphical data trends, interviews/observations, and Interpretation of the results and their implications. This report gives a unique perspective on how new literacies can be implemented in college courses and the implications of their implementation on students' empowerment.

III. RESULTS AND DISCUSSION

In this study, the researchers are concerned with the student population's perceptions of the implementation of technological literacy across content areas. Technological literacies are skills in connection with the technologies, sources accessed online, and more within an information technology environment. These literacies are becoming more relevant in the modern learning environment as they equip the learner with the requisite knowledge for the present-day world of work and living.

TABLE I. STUDENTS' PERCEPTIONS OF INTEGRATING TECHNOLOGICAL LITERACIES ACROSS DISCIPLINES

Items	Mean	SD	Description	Interpretation
How confident do you feel in your ability to apply new literacies (technological literacy) in your academic work?	2.83	0.915	Agree	Significant
Do you believe that integrating new literacies across academic disciplines can enhance your learning experience?	2.92	0.829	Agree	Significant
Do you engage in activities that involve the use of technological literacies (e.g., analyzing online sources, creating multimedia presentations) in your coursework?	3.17	0.645	Agree	Significant
Do you think integrated new literacies (i.e., technological literacy) can benefit your future career or professional development?	2.75	0.819	Agree	Significant
Do you think your current academic program incorporates technological literacies across different disciplines?	2.57	0.699	Agree	Significant
Do you face when trying to apply technological literacies in your academic work?	2.63	0.629	Agree	Significant
How strongly do you agree with the statement: "The support and resources provided by your institution effectively develop and enhance your technological literacies skills"?	2.72	0.723	Agree	Significant
Have you participated in any workshops, courses, or activities	3.28	0.685	Strongly Agree	Very Significant

focused on developing technological literacies skills?				
Do you believe integrated technological literacies can contribute to a more inclusive and diverse learning environment?	3.22	0.665	Agree	Significant
Over-all	**2.90**	**0.734**	**Agree**	**Significant**

Legends: 1.00-1.75 (very insignificant); 1.76-2.50 (insignificant); 2.51-3.26 (significant); 3.27-4.00 (very significant)

The table above provides a general overview of the student's perceptions and applications of new literacies, especially the technological ones within the learning process. It is evident that the responses encompass various aspects concerning technological literacy as well as the ways through which technology would be useful in their learning and later on in their respective careers. In sum, students are positive about their capabilities in the use of new literacies, which is reflected in their positive agreement on this factor. They think that the inclusion of new literacies that cut across different learning areas could be beneficial and, therefore, have a positive attitude toward this integration. Additionally, technology is used often with students using technological literacies in lessons, for example, critically evaluating the information found online and constructing multimedia projects, which reflects very positive attitudes.

Students' general attitudes are positive, and they also understand the importance of technological literacies for their future profession or professional growth. They equally opine that the current academic programs offered are comprised of technological literacies in various fields but with slightly less consensus. Students stay positive despite the many difficulties that come with the application of technological literacies. They admit that their institution offers strong support and resources to enhance their technological competence, which they consider as useful.

Moreover, workshops or courses oriented to technological literacy are particularly stressed, and students have considerably agreed and viewed this aspect positively. Moreover, students agree that practicing technological literacies in the classroom can improve the identity and diversity of learning. Concisely, the summed means express students' positive and congruent acceptance when it comes to the technological literacies' integration as well as the perceived gains from this integration within their academic lives.

Moreover, table 1 shows the context of digital literacy and academic achievement and the importance of technological literacy skills as a tool for knowledge acquisition by learners in terms of critical thinking skills and cognitive abilities. In fact, a detailed analysis of the research-based evidence supports calls for the inclusion of such readings in undergraduate course outlines. The extract also points to another study focusing on the topic of academic literacy skills with regard to challenges of learners at the tertiary level, discussing the benefits of integrated courses in arts and the need to conduct research within the parameters of distance learning.

Therefore, a suggested academic literacy development study discussed in the text being reviewed regards the critical thinking and academic writing abilities of students and how students can utilize academic language for critical thinking and effective academic writing while considering the difficulties faced by the students of the faculty of education regarding this particular aspect of academic learning and the importance of academic literacy practices (Elves et al., 2013). This suggests even more how information literacy contributes to the changes in an academic library environment, noting that utilizing it can enable people to make informed decisions as they critique the sources they select. The study uses the most elemental method of random sampling to reduce bias and generalize the results of the study.

IV. CONCLUSION AND RECOMMENDATIONS

Technological literacy integration has been the common ground in the educational system in honing the students' technical skills that can be used in their personal and professional growth. From the responses derived, the respondents are of a positive stance when it comes to integrating new literacies into their academics and future endeavors. They are confident in using these literacies, they engage in activities that elicit new literacies, and they believe that incorporating new literacy into learning and teaching enhances their learning processes. In addition, they have an agreed notion on how new literacies will assist their career and professional development.

Furthermore, the survey revealed that technological literacy exists in the subjects within their current academic program.

Nevertheless, they also described several difficulties when employing these literacies in academic tasks. However, they stated that the new mode of support and resources provided by their institution properly assists in developing new literacy skills and improving them. Surprisingly, numerous people have ever participated in workshops, courses, or events related to the development of new literacy, which confirms that a lot of people are actually trying to develop their reading and writing skills. They also believe that the integration of new literacies will foster increased diversities in the learning environment.

Therefore, it was found that the targeted demographic is fairly receptive to new approaches to learning in academic settings. This implies that the students could be willing to acquire, adapt, and utilize new learning techniques in their school and future occupations. The report champions the cause of recasting modern forms of literacy since this would open value to the ways learners apprehend ideas as well as endow them with the ability to operate fluidly within complex information architectures. This research suggests that by integrating traditional subject matters with the current and contemporary forms of literacy, it is possible to empower students in today's uncertain world of education. This further recommends that the students must be confident and capable of critical thinking. First of all, such results might be beneficial to teachers who attempt to cultivate non-discriminatory classroom environments that foster critical thinking, communication skills, and research skills, among other things, When the aim is to cultivate civil servants with democratic dispositions in contrast to being illiberal citizens as seems practically impossible today.

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